

# Artificial Intelligence

Where are we, and where are we going?

October 31, 2013

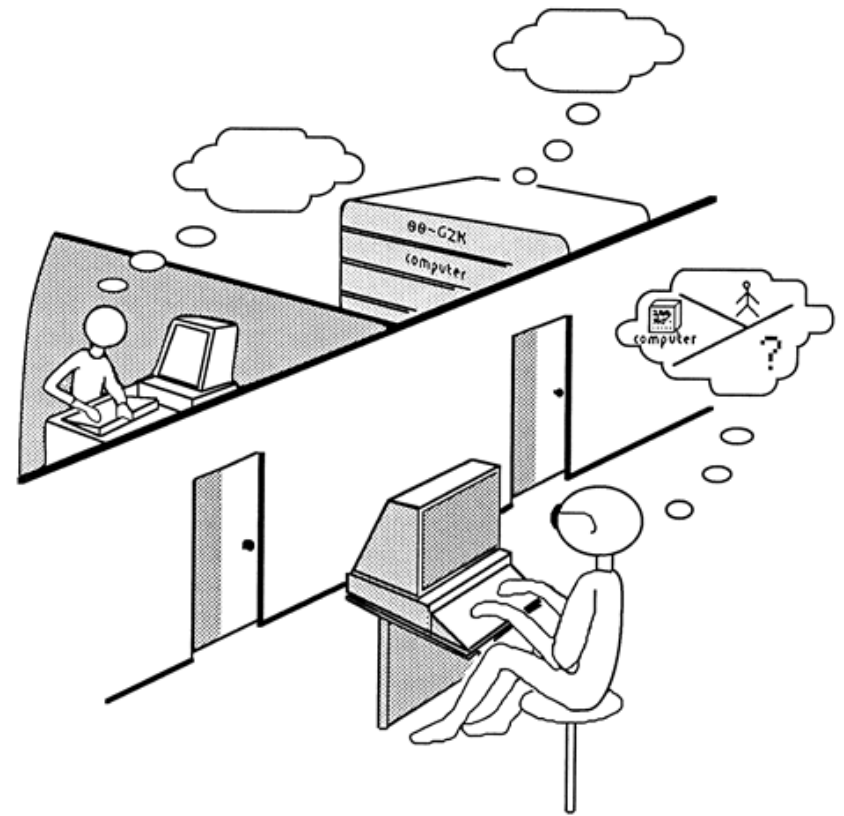
# Human or Computer?

- Which is easier for which?
- Task A
  - Add 1,000 numbers, each four digits long
- Task B
  - Identify the cat in the picture to the right



# The Turing Test

- Says the following:
- 1. A human sits across from (a) another human and (b) a computer
  - But cannot see them
- 2. Asks both the same question
  - And both reply
- 3. If the human cannot tell which is (a) and which is (b), (b) passes the Turing Test



# Cleverbot

- <http://www.cleverbot.com>
  - Started in 1997
  - Note: This agent is unique, in a sense that its responses are NOT programmed
    - It has learned overtime how to reply
- 59% of people surveyed in 2011 believed this was human
  - Generally 50% nowadays is considered a good 'benchmark'
  - Guess that means 100% is pretty difficult...

# Deep Blue (1997)

- Defeats world chess champion



- Has anyone ever beaten the hardest level of Mac Chess?
  - Btw, I haven't....

# Watson (2011)

- Wins on Jeopardy!
  - And beat 'Ken'!



- Let's watch a bit:
  - <http://www.youtube.com/watch?v=YLR1byLoU8M>
- Question: How did computers become so intelligent?

# Example: Strategy Games

- Nim (spin-off of Tic-Tac-Toe): Rules
  - I have nine spaces:
    - \_\_\_\_\_
  - Players alternate by placing 1, 2 or 3 X's and O's
    - The one who places their mark in the **red (last) spot** wins
- Visual Example:

• -----	Game Start
• XXX-----	X's Turn
• XXXO-----	O's Turn
• XXXOX----	X's Turn
• XXXOXOO--	O's Turn
• XXXOXOOXX	<b>X wins!</b>



# Nim

- Couple of students play me (the human) first
  - At the board
- Note a computer has a concept of memory!
  - Not as large as ours
  - But, less forgetful! Unless of course your hardware crashes...
  - Now I will be a computer... someone play me! 😊

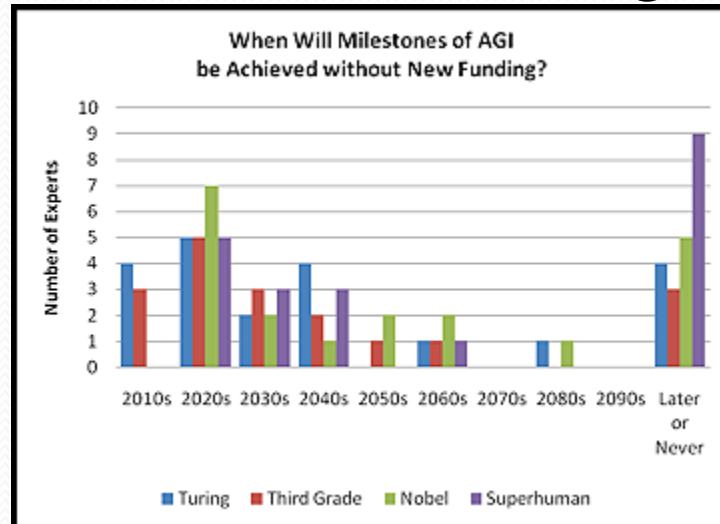


# Where We Are Now?

- Brink of passing the turing test (Keim ,2012):
  - <http://www.wired.com/wiredscience/2012/04/turing-test-revisited/>
- Verbal ability of a 4-year old (McKendrick, 2013):
  - <http://www.smartplanet.com/blog/bulletin/artificial-intelligence-now-has-verbal-ability-of-4-year-old-is-that-progress/24290>
- Smart search engines
  - <http://www.google.com>
  - Certainly an example of AI!

# Where Will We Go?

- That's for us to discuss now. Here's a 2010 graph with projections:



- Questions to ponder:
  - Will a machine and a human ever be indistinguishable?
  - How much is 'too much', or is there such a thing?
  - Are there certain decisions a machine 'cannot make'?